

# **SUMMARY REPORT OF PROPOSED DATA ELEMENTS FOR EMPACT PROJECTS**

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## CONTENTS

<b>EXECUTIVE SUMMARY</b>	ES-1
<b>1.0 INTRODUCTION</b>	1
1.1 Background	1
1.2 Purpose	1
1.3 List of Acronyms	2
1.4 Scope	3
1.5 References	3
<b>2.0 METHODOLOGY</b>	5
<b>3.0 EMPACT PROJECT SUMMARIES</b>	6
<b>4.0 SUGGESTED DATA ELEMENTS FOR EMPACT PROJECT DATABASES</b>	8
4.1 Data Elements	8
4.1.1 Sample Information Data Elements	8
4.1.2 Location Information Data Elements	10
4.1.3 Laboratory and Sample Analysis Data Elements	11
4.1.4 Project Description Data Elements	13
4.1.5 Data Quality Indicator Data Elements	18
<b>APPENDIX A</b>	EMPACT Data Logic Model
<b>APPENDIX B</b>	List of EMPACT Project Data Elements

## EXECUTIVE SUMMARY

In response to the President Clinton's Kalamazoo Initiative, delivered August 28, 1996, the Environmental Protection Agency (EPA) created the Environmental Monitoring for Public Access and Community Tracking program, also known as EMPACT. This program will provide local, time relevant environmental information to citizens and communities via the Internet (and other media). The primary function of the EMPACT program is to provide timely, accurate, and comprehensible environmental information to residents of the largest metropolitan areas in the country. To accomplish the EMPACT goals, the EPA will institute a program that coordinates EPA-sponsored projects with community initiated projects to produce national network of local environmental information. The goal of this new program is to increase the accessibility of "up-to-date environmental information that they (the public) can understand and use in day-to-day decision making about their health and the environment."

EMPACT projects are requested to use standard data elements and are required to register their data elements in the EPA's Environmental Data Registry (EDR) as part of this program. The purpose of this report is to identify data elements from the EDR and other sources that can be used in the development of EMPACT projects. Data Elements identified from other sources have been added to the EDR in support of the EMPACT effort.

To develop this list of potential data elements, 13 EPA EMPACT project proposals were reviewed for data element content. Data elements from these proposals were compared to the data elements currently registered in the EDR and other EPA databases. Projects that had limited information about data elements were contacted regarding additional information the point of contact could provide, including data definitions and acceptable values.

Five types of data elements were determined important to EMPACT projects through this process: sample, location, analysis, description, and Quality Assurance/Quality Control (QA/QC). A list of the data elements for documenting and reporting information in EMPACT projects was compiled based on these five data types. Data element specifications were developed from the EDR and the Department of Energy's Environmental Management Electronic Data Deliverable Master Specification (DEEMS). Project description data elements were established using the Government Information Locator System (GILS) Standards for metadata and the Dublin Core metadata standard. All data elements were developed with respect to the International Standards Organization/International Electrotechnical Commission (ISO/IEC) 11179 and American National Standards Institute (ANSI) X3.285 standards, which specify the attributes needed to describe data elements. The list of data elements developed by the Systems Development Center (SDC) Information and Data Management Service Center (IDMSC) for use in EMPACT data sets can be found in Appendix B - List of EMPACT Data Elements. The data element name, EDR number, and a definition of each data element are included. Acceptable values for each data element can be found on the EDR website at <http://www.epa.gov/edr>.

## **1.0 INTRODUCTION**

The Environmental Protection Agency (EPA), Office of Information Resources Management (OIRM), Enterprise Information Management Division (EIMD), through the mission of its Information and Data Management (IDM) Program, has introduced the concept of centralized management and coordination of EPA's distributed information and data resources. The data policies and standards of the IDM program will be supported by data architecture, data models, standard data element domains, and a repository of standard data elements. These work products will facilitate data sharing efforts and effective management of EPA's Information Resources Management (IRM) resources. The Environmental Monitoring for Public Access and Community Tracking (EMPACT) program is a new addition to these on-going efforts.

### **1.1 Background**

On August 28, 1996, President Clinton announced the Kalamazoo Initiative. This Initiative directs EPA to create a new program that provides local, time relevant environmental information to communities via the Internet and other media. The goal of this new program is to increase the accessibility of environmental information available to the public. EMPACT will educate citizens about their surrounding environment and enable them to make informed choices about their daily activities.

In response to the President Clinton's directive, the EPA created the EMPACT program. EMPACT's primary function is to provide timely, accurate, and comprehensible environmental information to residents of the largest metropolitan areas in the country. To accomplish EMPACT goals, the EPA instituted a program that coordinates EPA-sponsored projects with community initiated projects. EPA has awarded EMPACT grants for 13 EPA-sponsored projects, and proposals have been received for the community-level project grants. Community-level project grants will be awarded in the Fall of 1998.

The EMPACT program is responsible for bringing the public "up-to-date environmental information that they can understand and use in day-to-day decision making about their health and the environment." The program will produce guidelines for a technology, information architecture, and data standards consistent for all EMPACT projects. EMPACT projects are requested to use standard data elements and are required to register their data elements in the Environmental Data Registry (EDR).

### **1.2 Purpose**

The purpose of this report is to recommend potential data elements for EMPACT projects. The purpose of the EDR is to promote the collection of data in a consistent fashion through the use of standard data elements in information systems. Standards promote the reuse of information, which can save the considerable expense of collecting multiple sets of accurate,

verified data.

### 1.3 List of Acronyms

ANSI	American National Standards Institute
BEACH	Beaches Environmental Assessment, Closure and Health
CFR	Code of Federal Regulations
DEEMS	Department of Energy Environmental Management Electronic Data Deliverable Master Specification
EDR	Environmental Data Registry
EIMD	Enterprise Information Management Division
EMPACT	Environmental Monitoring for Public Access and Community Tracking
EPA	Environmental Protection Agency
FDGC	Federal Geographic Data Committee
FY	Fiscal Year
GILS	Government Information Locator System
IA	Iowa
IDM	Information Data Management
IDMSC	Information and Data Management Service Center
IEC	International Electrotechnical Commission
IRM	Information Resources Management
ISO	International Standards Organization
ITIS	Integrated Taxonomic Information System
NPDES	National Pollutant Discharge Elimination System
OAR	Office of Air and Radiation
OECA	Office of Enforcement and Compliance Assurance
OIRM	Office of Information Resources Management
OPPT	Office of Pollution Prevention and Toxics
OPPTS	Office of Prevention, Pesticides, and Toxic Substances
ORD	Office of Research and Development
OSW	Office of Solid Waste
OW	Office of Water
PM	Particulate Matter
QA	Quality Assurance
QC	Quality Control
QEIC	Quantitative Environmental Indicators of Contaminations
SDC	Systems Development Center
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UV	Ultraviolet

### 1.4 Scope

This document is limited to proposing a potential set of data elements for use in databases developed as part of EMPACT projects. All recommended data elements will be described and registered in the EDR.

## 1.5 References

The following publications were used as references for preparing this report:

- American National Standards Institute, Inc., *Metamodel for the Management of Shareable Data*, Draft November 10, 1997-ANSI X3.285:199x, American National Standard for Information Technology, 1997.
- Bechtel Environmental, Inc., San Francisco, CA, *Annotated Field Sample Plan, USEPA Region IX, Hazardous Waste Management Division, Field Operations Branch, April 5, 1995*.
- Des Moines, IA Water Works, *Water Data and Tools for the city of Des Moines, IA EMPACT Project Proposal*.
- Federal Agency Partnership, *Integrated Taxonomic Information System (ITIS), Standard for comparison of biodiversity data sets containing classifications with broad acceptance in the taxonomic literature*, <http://www.itis.usda.gov/itis/standard.html>.
- Federal Geographic Data Committee (FDGC), *Content Standard for Digital Geospatial Metadata, Version 1*, June 1998, FGDC-STD-001-1998.
- Federal Geographic Data Committee (FDGC), *Metadata elements included in the Metadata Entry System*, <http://fgdc.er.usgs.gov/>.
- International Standards Organization, *Information Technology – Specification and Standardization of Data Elements Part 6: Registration of Data Elements*, Draft International Standard ISO/IEC DIS 11179-6, ISO 1990.
- United States Department of Energy, *Department of Energy Environmental Management Electronic Data Deliverable Master Specification (DEEMS) Implementation Guide for Reporting Analytical Data, Version 1.0*, May 1997.
- USEPA GILS Workgroup, *EPA Government Information Locator Service (GILS)*, <http://www.epa.gov/gils>.
- USEPA Method Accuracy Description (MAD) *Version 6.1 Information Coding Standards for the USEPA Locational Data Policy*, November 1994.

- USEPA Long Island Sound Office, *Marine Environmental Monitoring Network for Long Island Sound EMPACT Project Proposal*.
- USEPA Office of Air and Radiation (OAR), *Sunwise School/UV Index Initiative for the cities of Boston and Phoenix EMPACT Project Proposal*.
- USEPA Office of Air and Radiation (OAR), *Time-Relevant Air Quality Data Nationwide EMPACT Project Proposal*.
- USEPA Office of Enforcement and Compliance Assurance (OECA), *NPDES Environmental Impact Notification, Region 6 EMPACT Project Proposal*.
- USEPA, Office of Information Management (OIRM), *The Environmental Data Registry (EDR)*, <http://www.epa.gov/edr>.
- USEPA, Office of Research and Development (ORD), *EMPACT Environmental Monitoring Website*, <http://intranet.epa.gov/agcyintr/empact/emp1pg.htm>.
- USEPA, Office of Research and Development (ORD), *EPA Quality Manual for Environmental Programs 5360*, July 1998.
- USEPA, Office of Research and Development (ORD), *Guiding Principles for Monte Carlo Analysis*, March 1997, EPA Document: EPA/630/R-97/001.
- USEPA Office of Solid Waste (OSW), *Quantitative Environmental Indicators of Contaminations (QEIC) EMPACT Project Proposal*.
- USEPA Office of Water (OW), *Office of Water Beach Program EMPACT Project Proposal*.
- USEPA Office of Water (OW), *Time-Critical Water Data and Tools EMPACT Project Proposal*.
- USEPA OPPTS/OPPT, *Establishing Community-Based Tools and Training for Assessing and Improving Environmental Health EMPACT Project Proposal*.
- USEPA Region 1, *A Community Based Environmental Lead Assessment and Educational Demonstration Program EMPACT Project Proposal*.
- USEPA Region 5, *Community-Accessible Air Quality Monitoring Assessment System in Northeast Ohio EMPACT Project Proposal*.

- USEPA Region 5 Superfund Division/Region 7, *Superfund Division, Community Driven Environmental Indicators for the Metro East St. Louis/St. Louis Urbanized Area EMPACT Project Proposal*.
- USEPA Region 9, *Community Air Toxics Monitoring via "Bucket Brigades" EMPACT Project Proposal*.
- United States Geological Survey (USGS), *Draft Content Standard for National Biological Information Infrastructure Metadata Workbook*, April 1998.
- United States Geological Survey (USGS), *USGS Participation in EMPACT Project Proposal*.
- Warwick Workshop, *Dublin Core Metadata*,  
[http://www.purl.org/metadata/dublin\\_core/main.html](http://www.purl.org/metadata/dublin_core/main.html).

## 2.0 METHODOLOGY

EPA Systems Development Center (SDC) Information and Data Management Service Center (IDMSC) has been tasked with developing a list of data elements for use in EMPACT project data sets. The proposals submitted by each of the 13 EPA EMPACT projects were reviewed for data element content and future requirements. Data element content was compared with the data elements currently in the EDR, as well as existing information present in other EPA databases. Projects that had limited information about data elements were contacted regarding additional information that the point of contact could provide including data definitions and acceptable values.

Five types of data elements were determined important to EMPACT projects; sample, location, analysis, description and QA/QC. A logical model was developed to visually depict the relationship of the data elements described in the text. This model is found in Appendix A - EMPACT Data Logic Model. The model displays the correlations between sample information data elements, location data elements, laboratory and sample analysis data elements, and project description data elements.

A list of the data elements for documenting and reporting information in EMPACT projects was compiled based on the four-point logical model. The data element specifications were retrieved from the EDR and DEEMS. Descriptive data elements were established using the GILS Standards for metadata and the Dublin Core metadata standard. All data elements were developed with respect to the ISO/IEC 11179 and ANSI X3.285 standards, which specify the attributes needed to describe data elements. The list of data elements developed by the SDC



IDMSC for use in EMPACT data sets is included in Appendix B - List of EMPACT Data Elements.

### **3.0 EMPACT PROJECT SUMMARIES**

This section includes a summary of 13 USEPA EMPACT projects reviewed for this document. These projects will likely be the first to receive EMPACT funding and the first to go on-line for public access.

1. Water Data and Tools for the city of Des Moines, Iowa (partnership between USEPA and the Des Moines Water Works) - This project will provide the public with source and treated water quality data for the city of Des Moines. This information will be linked to EPA's Surf Your Watershed website (<http://www.epa.gov/surf>).
2. Time-relevant Air Quality Nationwide (USEPA OAR) - This project will provide time-relevant air quality information to the public in an understandable format for 39 EMPACT cities. This project will map ozone, particulate matter (PM), toxics and other pollutants and will expand to 85 EMPACT cities by Fiscal Year (FY) 2001.
3. Development of a Community-Accessible Air Quality Monitoring Assessment for Northeast Ohio (USEPA Region 5) - The main goal of this project is to create an environmental analysis system that could be used by local residents to reduce their exposure to air pollution. Another goal of this project is to inform local governments about regional impacts of air pollution in the Northeast Ohio area.
4. The Sunwise School Project UV Index Initiative (USEPA OAR, Stratospheric Protection Division) - The main objective of the project is to inform the public of time-relevant UV data. This data will be used to lower the risk of sun over exposure in school age children in the Boston and Phoenix area.
5. NPDES Environmental Impact Notification (USEPA OECA) - This project will automate the noncompliance system for facilities permitted under 40 CFR 122.41 (1) (6) of the Clean Water Act. This will increase the public awareness of these noncompliance events. New Orleans, Dallas-Fort Worth, and Houston-Galveston-Brazoria are the three EMPACT cities that will pilot this project.
6. Community Based Environmental Lead Assessment and Educational Demonstration Project (USEPA OPPTS) - The purpose of this project is to reduce urban children's exposure to lead outdoors. A study will correlate blood lead data with soil and dust remediation in the Baltimore-Washington, DC area.

7. Quantitative Environmental Indicators of Contamination (QEIC) (USEPA OSW) - The OSW is partnering with USEPA Region 2 and the New Jersey Department of Environmental Protection for this project. The QEIC project will relay time-relevant contamination data in a graphical format to local communities. QEIC's pilot program will consist of 20 communities in the New York City, Philadelphia, and New Jersey areas. It will expand to 5,000 sites in EMPACT cities by FY 2001.
8. Time-Critical Water Data and Tools (USEPA OW) - This project will assist urban areas with real-time data collection and interpretation of water data. This data will be incorporated into USEPA's Surf Your Watershed website. Time-Critical Water Data and Tools will be piloted in New Orleans, Cincinnati, Pittsburgh, Baltimore, Raleigh, Washington DC, Seattle, and Des Moines.
9. The Office of Water BEACH Program (USEPA OW) - This project will provide the public with time-relevant water quality information at beaches throughout the country. Seven regional projects will coordinate the development and distribution of a detailed beach contamination survey for their areas through the BEACH program. A secondary goal of this project is to improve the capabilities to predict beach contamination.
10. A Community Based Environmental Lead Assessment and Educational Demonstration Program (USEPA Region 1) - The goal of this project is to reduce the blood level in a Boston urban community. It is an educational program that will focus on low cost and no cost lead remediation measures.
11. Marine Environmental Monitoring Network for Long Island Sound (USEPA Region 1 Long Island Sound Program Office) - This project will provide real-time marine water quality data on-line for the Long Island Sound and its harbors and estuaries.
12. Community Driven Environmental Indicators for the Metro East St. Louis and St. Louis Urbanized Area (Joint USEPA Region 5 and USEPA Region 7) - The project will enable the community to decide which environmental indicators they are interested in. The process of data dissemination will then be developed to provide the community with this data.
13. Community Air Toxics Monitoring via "Bucket Brigades" (Region 9) - This project will provide access to air toxics data collected by community members. These community members are trained to collect air samples through an existing program called the "Bucket Brigades." This project will take place in the Oakland, California area.

## 4.0 SUGGESTED DATA ELEMENTS FOR EMPACT PROJECT DATABASES

EMPACT projects will collect and make available large amounts of environmental data for cities and localities across the country. The data will primarily be compiled and distributed locally, however, standardization in the data collection phase will allow for the comparison and analysis of EMPACT data sets. The following data elements are suggested as a starting point, or a minimum set of data elements, for use in the development of EMPACT databases. A more extensive list of data elements can be found at the USEPA's EDR website (<http://www.epa.gov/edr>).

The list of data elements, found in Section 5.1 and detailed in Appendix B, was compiled after an extensive review of the data collected by the first 13 USEPA EMPACT project proposals. Data element specifications were developed using the EDR, DEEMS, GILS, and the Dublin Core Metadata standards as references.

### 4.1 Data Elements

The data elements for EMPACT projects are described in the following four sections. They have been broken out into these subsections to aid the user in determining the proper use of each data element. Some data elements appear multiple times in these subsections where appropriate. The data element name, EDR number, and a short description of the use of each data element is included. Section 5.1.1 describes data elements related to sample collection, Section 5.1.2 details the data elements used to describe and locate the sample collection site, Section 5.1.3 describes the data elements associated with laboratory analysis of the sample collected, and Section 5.1.4 describes project description data elements that can be used in electronic references to EMPACT data sets. Further descriptive information about EMPACT data elements including; Data Element Name, Definition, Data Type, Data Length, and an EDR Identifier Code (for currently registered data elements) is described in Appendix B. Acceptable values for each data element can be found on the EDR website at (<http://www.epa.gov/edr>).

#### 4.1.1 Sample Information Data Elements

The following data elements are suggested to store sample information in EMPACT databases. Sample information includes data on what is sampled, when it is sampled, how it is sampled, and who samples it. Sample information also records the quantity of the analyte collected and the conditions under which the sample was taken.

Data Element Name	Sample Information Data Element Definition	EDR Identifier
Analyte Name	The name of the physical feature, biologic entity, or chemical substance monitored.	20763

<b>Data Element Name</b>	<b>Sample Information Data Element Definition</b>	<b>EDR Identifier</b>
Analyte Type Text	The text that describes the nature of the analyte within a broad scientific field.	20764
Field Observations Text	The text that describes the field conditions of sampling.	20774
Measured Quantity Number	The dimension, capacity, or amount of something ascertained by measuring.	6135
Related Onsite Measurement Data Text	The text that describes any measurements related to but not part of the sampling effort.	20786
Sample Amount Quantity	The quantity of weight or volume of field sample collected.	20794
Sample Amount Units Text	The text that describes the units for sample amount.	20795
Sample Average Measure	The statistical measure of the average of a set of values.	20825
Sample Calibration Factor Measure	The measure of the factor determined to convert measured sample to final results.	20796
Sample Calibration Factor Units Text	The text that describes the units for calibration factor.	20797
Sample Collection End Date	The calendar date when collection of the analyte was finished.	20798
Sample Collection End Time Measure	The measure of clock time when collection of the analyte was finished.	20799
Sample Collection Equipment Text	The text that describes information about the equipment used to collect the sample.	20800
Sample Collection Start Date	The calendar date when collection of the analyte began.	20801
Sample Collection Start Time Measure	The measure of clock time when collection of the analyte began.	20802
Sample Container Type Text	The text that describes the type of container used to collect sample.	20803
Sample Depth/Altitude Measure	The numerical measure of the vertical location of sample collection.	20804
Sample Depth/Altitude Units Text	The text that describes the units for sample Depth/Altitude.	20805
Sample Description Text	The text that describes the readily observable characteristics of a sample.	20767
Sample Equipment Calibration Text	The text that describes the method used to calibrate the sampling equipment.	20806
Sample Frequency Measure	The measure of the periodicity with which the sample is collected.	20807
Sample Identification Code	The unique code assigned to identify the sample.	20808
Sample Matrix Text	The text that describes the media type of the sample.	20809
Sample Median Measure	The statistical measure of the median of a set of values.	20831
Sample Method Text	The text that describes the method used to collect an analyte.	20810
Sample Variance Measure	The statistical measure of the dispersion of a set of values.	20811
Sampler Text	The text that describes the personal information of the sampler.	20812
Site Identifier	The identifier for the broadly defined site where the sample was collected.	20815
Site Name	The descriptive name for the broadly defined site where the sample was collected.	20816
Unit of Measure Name	The name of the determinate quantity for a standard of measurement used for measuring dimension, capacity, or amount of something.	5304

#### 4.1.2 Location Information Data Elements

The following data elements are suggested to store location information in EMPACT databases. Location information is data that allows viewers to establish the exact location from which the sample was collected. This information can also aid in the aggregation of data for future analysis. The EPA information coding standards for latitude/longitude data elements were used as a starting point for the following list.

Data Element Name	Location Information Data Element Definition	EDR Identifier
Direct Spatial Reference Method Text	The text describing the system of objects used to represent space in the data set.	20882
Geometric Type Name	The name of the geometric entity represented by one point or a sequence of latitude and longitude points.	5761
Horizontal Accuracy Measure	The measure of the accuracy (in meters) of the latitude and longitude coordinates.	5264
Horizontal Collection Method Text	The text that describes the method used to determine the latitude and longitude coordinates for a point on the earth.	5731
Horizontal Reference Datum Name	The name that describes the reference datum used in determining latitude and longitude coordinates.	5292
Latitude Measure	The measure of the angular distance on a meridian north or south of the equator.	5518
Location Description Text	The text that describes the sampling location.	20779
Location Identifier	The identifier for the sampling location at a site.	20780
Location Name	The name that describes the sampling location at a site.	20781
Longitude Measure	The measure of the angular distance on a meridian east or west of the prime meridian.	5520
Reference Point Text	The text that identifies the place for which geographic coordinates were established.	5288
Site Identifier	The identifier for the broadly defined site where the sample was collected.	20815
Site Name	The descriptive name for the broadly defined site where the sample was collected.	20816
Source Map Scale Number	The number that represents the proportional distance on the ground for one unit of measure on the map or photo.	5318

#### 4.1.3 Laboratory and Sample Analysis Data Elements

The following data elements are suggested to store laboratory and analysis information in EMPACT databases. Analysis information includes data on what is analyzed, when it is

analyzed, how it is analyzed, and who analyzes it. This information records the conditions under which the analysis was completed and the final quantity of the analyte determined. Analysis data also provides the QA/QC data required to establish analysis validity.

<b>Data Element Name</b>	<b>Laboratory Analysis Data Element Definition</b>	<b>EDR Identifier</b>
Analysis Calibration Factor Number	The numeric factor determined to convert the measured analysis sample to final results.	20754
Analysis Calibration Factor Unit Text	The text that describes the name of the determinate quantity for a standard of measurement used for measuring calibration factor.	20755
Analysis Date	The calendar date when the analyte was analyzed.	20756
Analysis Equipment Calibration Method Text	The text that describes the method used to calibrate the analysis equipment.	20758
Analysis Equipment Text	The text that describes the equipment used to analyze the sample.	20757
Analysis Method Name	The name of the method used to analyze the sample.	20759
Analysis Time Measure	The measure of clock time when the analyte was analyzed.	20760
Analyst Name	The name of the person completing the analysis.	20761
Analyte Definition Text	The text that describes the analyte including the chemical formula, physical attributes, or detailed description of the entity monitored.	20762
Analyte Name	The name of the physical feature, biologic entity, or chemical substance monitored.	20763
Analyte Type Text	The text that describes the nature of the analyte within a broad scientific field.	20764
Laboratory Analysis Identifier	The identifier that describes the unique laboratory identification for an analysis sample.	20776
Laboratory Information Text	The text that describes the information about the laboratory where the analysis was completed.	20777
Measured Quantity Number	The dimension, capacity, or amount of something ascertained by measuring.	6135
Replicate Analyses Text	The text that describes analyses of the variable of interest performed identically on multiple subsamples of the same sample within a short time interval.	20789
Replicate Sample Identifier	The identifier for multiple samples which are independently carried through all steps of the sampling process in an identical manner.	20790
Representative Sample Identifier	The identifier for a sample taken so as to reflect the variable(s) of interest in the population as accurately and precisely as specified.	20791
Unit of Measure Name	The name of the determinate quantity for a standard of measurement used for measuring dimension, capacity, or amount of something.	5304
Variability Measure	The measure of the observed differences attributable to diversity in a population.	20823

#### 4.1.4 Project Description Data Elements

The following data elements are suggested for use in electronic references to EMPACT data sets. These data elements were selected primarily from the GILS Metadata data elements registered in the EDR. A small number of data elements were also included from the Dublin Core standards. A description of the acceptable values for these data elements can be found at the EDR website.

Data Element Name	Project Description Data Element Definition	EDR Identifier
Abstract	This element presents a narrative description of the information resource. This narrative should provide enough general information to allow the user to determine if the information resource has sufficient potential to warrant contacting the provider for further information.	11503
Access Constraints	This element is a grouping of subelements that together describe any constraints or legal prerequisites for accessing the information resource or its component products or services.	11506
Available Linkage	This subelement provides the information needed to contact an automated system made available by this distributor. Available linkages are appropriate to reference other locators, facilitate electronic delivery of off-the-shelf information products, or guide the user to data systems that support analysis and synthesis of information. This subelement consists of the subordinate elements Linkage Type and Linkage. It must be repeated for every new instance of Linkage Type.	11514
Beginning Date	The date describing when an event started.	20868
Browse Graphic Caption Text	The text description of the legend accompanying an illustration.	20879
Browse Graphic File Type Text	The text describing the graphic file type of a related graphic file.	20880
Browse Graphic File Universal Resource Locator Text	The text giving the name of a related graphic file that provides an illustration of the data set.	20881
Control Identifier	This element is defined by the information provider and is used to distinguish this locator record from all other GILS Core locator records.	11502
Currentness Reference Text	The text describing the basis on which the source time period of content information of the source data set is determined.	20870
Date Last Modified	This element identifies the latest date on which this locator record was created or modified.	11518
Distribution Organization Name	The name of the distributing organization.	20883
Distributor	This subelement consists of the following subordinate fields that provide information about the distributor.	11509
Distributor Address Text	The text that describes an address line for the address.	20885

<b>Data Element Name</b>	<b>Project Descripton Data Element Definition</b>	<b>EDR Identifier</b>
Distributor Address Type Text	The text describing the information provided by the distributor address.	20884
Distributor City Name	The name of the distributor address city.	20886
Distributor Country Name	The name of the distributor address country.	20889
Distributor Electronic Mail Address Text	The address of the electronic mailbox of the distributor organization or individual.	20892
Distributor Facsimile Number	The telephone number of a facsimile machine of the organization or individual.	20891
Distributor Liability Text	The text describing the statement of the liability assumed by the distributor.	20894
Distributor Phone Number	The telephone number by which individuals can speak to the distributor organization or individual.	20890
Distributor Postal Code	The code representing the distributor address ZIP code or other postal code.	20888
Distributor State or Province Name	The name of the distributor address state or province.	20887
East Bounding Coordinate Number	The number of the Eastern-most coordinate of the limit of coverage expressed in longitude.	20874
Edition Text	The text describing the edition of the referenced title.	20864
Ending Date	The date describing when an event stopped.	20869
EPA Region Name	The name that identifies an EPA Region.	5775
Format Text	The text that describes the type of system used to present the data.	20775
Index Terms - Controlled	This subelement is a grouping of descriptive terms drawn from a controlled vocabulary source to aid users in locating entries of potential interest. Each term is provided in the subordinate repeating field: Controlled Term.	11522
Language Text	The text that describes the language used in the data set.	20778
Maintenance Frequency Text	The text describing the frequency with which modifications are made to the data set after the initial data set is completed.	20872
North Bounding Coordinate Number	The number of the Northern-most coordinate of the limit of coverage expressed in latitude.	20875
Originator	This element identifies the information resource originator.	11505
Place Keywords Name	The geographic name of a location covered by a data set.	20877
Place Reference Text	The text describing the reference to a formally registered thesaurus or a similar authoritative source of place keywords.	20878
Point of Contact for Further Information	This element identifies an organization, and a person where appropriate, serving as the point of contact plus methods that may be used to make contact.	11516
Presentation Form Text	The text describing the mode in which the geospatial data are represented.	20865
Profile Address City Name	The name of the profile address city.	20856
Profile Address Country Name	The name of the profile address country.	20859



<b>Data Element Name</b>	<b>Project Descripton Data Element Definition</b>	<b>EDR Identifier</b>
Profile Address Postal Code	The code representing the profile address ZIP code or other postal code.	20858
Profile Address State or Province Name	The name of the profile address state or province.	20857
Profile Address Text	The text that describes an address line for the address.	20855
Profile Address Type Text	The text describing the information provided by the profile address.	20854
Profile Electronic Mail Address Text	The address of the electronic mailbox of the profile organization or individual.	20862
Profile Facsimile Number	The telephone number of a facsimile machine of the profile organization or individual.	20861
Profile Metadata Organization Name	The name of the organization which provides the metadata information.	20853
Profile Telephone Number	The telephone number by which individuals can speak to the profile organization or individual.	20860
Program Interest Name	The name that indicates the environmental concern that is the reason for interest in a facility.	6163
Progress Text	The text describing the state of the data set.	20871
Publication Date	The date when the reference material was published or otherwise made available for release.	20863
Publication Place Text	The text describing the location where the data set was published or released.	20866
Publisher Name	The name of the individual or organization that published the data set.	20867
Purpose	This element describes why the information resource is offered and identifies other programs, projects, and legislative actions wholly or partially responsible for the establishment or continued delivery of this information resource. It may include the origin and lineage of the information resource, and related information resources.	11504
Resource Description	This subelement identifies the resource as it is known to the distributor.	11510
South Bounding Coordinate Number	The number of the Southern-most coordinate of the limit of coverage expressed in latitude.	20876
Standard Reference Material Text	The text that describes a certified reference produced by the U.S. National Institute of Standards and Technology.	20819
Supplemental Information	Through this element, the record source may associate other descriptive information with the GILS Core locator record.	11537
Thesaurus	This subelement provides the reference to a formally registered thesaurus or similar authoritative source of the controlled index terms. Notes on how to obtain electronic access to or copies of the referenced source should be provided, possibly through a cross reference to another locator record that more fully describes the standard and its potential application to locating GILS information.	11523

<b>Data Element Name</b>	<b>Project Description Data Element Definition</b>	<b>EDR Identifier</b>
Title	This element conveys the most significant aspects of the referenced resource and is intended for initial presentation to users independently of other elements. It should provide sufficient information to allow users to make an initial decision on likely relevance. It should convey the most significant information available, including the general topic area, as well as a specific reference to the subject.	11501
Update Frequency Text	The text that describes the length of time between instances when new data is added to the data set.	20822
Use Constraints	This element describes any constraints or legal prerequisites for using the information resource or its component products or services. This includes any use constraints applied to assure the protection of privacy or intellectual property and any other special restrictions or limitations on using the information resource.	11507
West Bounding Coordinate Number	The number of the Western-most coordinate of the limit of coverage expressed in longitude.	20873

#### **4.1.5 Data Quality Indicator Data Elements**

The following data elements are suggested for use in data quality references to EMPACT data sets. These data elements were selected primarily from the EPA QA Manual 5360 and Guiding Principles for Monte Carlo Analysis (EPA Document: EPA/630/R-97/001). These data elements include quantitative statistics and qualitative descriptors that are used to interpret the degree of acceptability or utility of data to the user. The principal data quality indicators are bias, precision, accuracy, comparability, completeness, and representativeness.

<b>Data Element Name</b>	<b>QA/QC Data Element Definition</b>	<b>EDR Identifier</b>
Accuracy Measure	The measure of the closeness of an individual measurement or the average of a number of measurements to the true values.	20753
Bias Number	The number that details the systematic or persistent distortion of a measurement process which causes errors in one direction.	20765
Coefficient of Variation Measure	The measure of relative precision.	20766
Comparability Measure	The measure that expresses the degree to which different entities can contribute to a common analysis and interpolation.	20768
Completeness Measure	The measure that describes the amount of valid data obtained compared to the planned amount.	20769
Confidence Level Number	The number value at which the average value of the attribute obtained by sampling is equal to the true population value.	20770

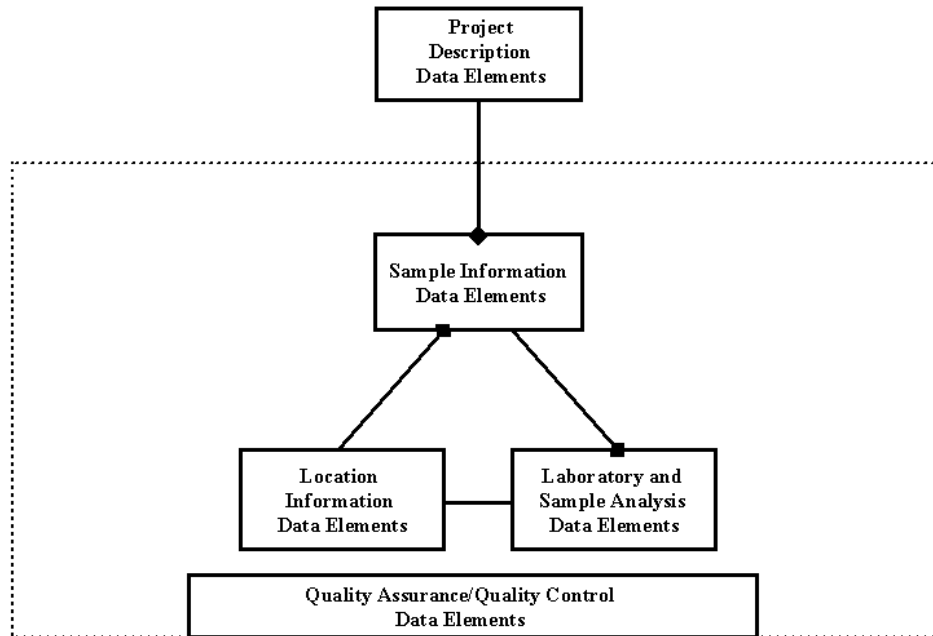
<b>Data Element Name</b>	<b>QA/QC Data Element Definition</b>	<b>EDR Identifier</b>
Detection Limit Number	The number that describes the quantity of sample below which the sample analysis equipment will not detect the analyte accurately.	20771
Detection Limit Type Text	The text that describes the type of detection limit.	20772
Detection Limit Units Text	The text used to describe the units used for detection limit.	20773
Mean Standard Error Measure	The measure of the overall quality of the data collected.	20782
Precision Measure	The measure of mutual agreement among individual measurements of the same property.	20783
Quantitation Limits Measure	The measure of the quantities of a target variable that can be quantified with the certainty required by the data user.	20784
Recovery Measure	The measure of bias in a measurement.	20785
Relative Standard Deviation Measure	The measure of the standard deviation expressed as a percentage of the mean recovery.	20787
Repeatability Measure	The measure of the degree of agreement between independent test results produced by the same analyst using the same test method and equipment on random sampling of the same sample within a short time period.	20788
Representativeness Measure	The measure of the degree to which data represents the frequency distribution of a specific variable in the population.	20792
Reproducibility Measure	The measure of the precision of the variability among the results of measurements of the same sample at different laboratories.	20793
Sampling Error Measure	The measure of the difference between an estimate of a population value and its true value.	20813
Sensitivity Measure	The measure of the capability of method or instrument to discriminate between measurement responses representing different levels of a variable of interest.	20814
Standard Deviation Measure	The measure that describes the imprecision of observed values.	20817
Standard Error Measure	The measure of the variability in estimates that occurs in repeated sampling.	20818
Total Measurement Error Measure	The measure of the sum of all the errors that occur from the taking of the sample through the reporting of results.	20820
Uncertainty Measure	The measure of the total variability associated with sampling error.	20821

## **APPENDIX A**

### **EMPACT Data Logic Model**

(Go to the bottom of page for the text of the EMPACT Data Logic Model)

# EMPACT Data Logic Model



Top box: Project Description Data Elements

Next box down: Sample Information Data Elements

Arrow to right box: Laboratory and Sample Analysis Data Elements

Arrow from the second box beside Laboratory and Sample Analysis Data Elements:  
(Location Information Data Elements)

Bottom Box: Quality Assurance/Quality Control Data Elements

## **APPENDIX B**

### List of EMPACT Project Data Elements

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Abstract	11503	This element presents a narrative description of the information resource. This narrative should provide enough general information to allow the user to determine if the information resource has sufficient potential to warrant contacting the provider for further information.	Alphanumeric	500
Access Constraints	11506	This element is a grouping of subelements that together describe any constraints or legal prerequisites for accessing the information resource or its component products or services.	Alphanumeric	500
Accuracy Measure	20753	The measure of the closeness of an individual measurement or the average of a number of measurements to the true values.	Alphanumeric	10
Analysis Calibration Factor Number	20754	The numeric factor determined to convert the measured analysis sample to final results.	Numeric	40
Analysis Calibration Factor Unit Text	20755	The text that describes the name of the determinate quantity for a standard of measurement used for measuring calibration factor.	Alphanumeric	40
Analysis Date	20756	The calendar date when the analyte was analyzed.	Date	8
Analysis Equipment Calibration Method Text	20758	The text that describes the method used to calibrate the analysis equipment.	Alphanumeric	150
Analysis Equipment Text	20757	The text that describes the equipment used to analyze the sample.	Alphanumeric	100
Analysis Method Name	20759	The name of the method used to analyze the sample.	Alphanumeric	40
Analysis Time Measure	20760	The measure of clock time when the analyte was analyzed.	Alphanumeric	10
Analyst Name	20761	The name of the person completing the analysis.	Alphanumeric	200
Analyte Definition Text	20762	The text that describes the analyte including the chemical formula, physical attributes, or detailed description of the entity monitored.	Alphanumeric	100
Analyte Name	20763	The name of the physical feature, biologic entity, or chemical substance monitored.	Alphanumeric	40
Analyte Type Text	20764	The text that describes the nature of the analyte within a broad scientific field.	Alphanumeric	40

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Available Linkage	11514	This subelement provides the information needed to contact an automated system made available by this distributor. Available linkages are appropriate to reference other locators, facilitate electronic delivery of off-the-shelf information products, or guide the user to data systems that support analysis and synthesis of information. This subelement consists of the subordinate elements Linkage Type and Linkage. It must be repeated for every new instance of Linkage Type.	Alphanumeric	500
Beginning Date	20868	The date describing when an event started.	Date	8
Bias Number	20765	The number that details the systematic or persistent distortion of a measurement process which causes errors in one direction.	Numeric	10
Browse Graphic Caption Text	20879	The text description of the legend accompanying an illustration.	Alphanumeric	200
Browse Graphic File Type Text	20880	The text describing the graphic file type of a related graphic file.	Alphanumeric	100
Browse Graphic File Universal Resource Locator Text	20881	The text giving the name of a related graphic file that provides an illustration of the data set.	Alphanumeric	100
Coefficient of Variation Measure	20766	The measure of relative precision.	Alphanumeric	25
Comparability Measure	20768	The measure that expresses the degree to which different entities can contribute to a common analysis and interpolation.	Alphanumeric	10
Completeness Measure	20769	The measure that describes the amount of valid data obtained compared to the planned amount.	Alphanumeric	10
Confidence Level Number	20770	The number value at which the average value of the attribute obtained by sampling is equal to the true population value.	Numeric	10
Control Identifier	11502	This element is defined by the information provider and is used to distinguish this locator record from all other GILS Core locator records.	Alphanumeric	500
Currentness Reference Text	20870	The text describing the basis on which the source time period of content information of the source data set is determined.	Alphanumeric	100



<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Date Last Modified	11518	This element identifies the latest date on which this locator record was created or modified.	Date	8
Detection Limit Number	20771	The number that describes the quantity of sample below which the sample analysis equipment will not detect the analyte accurately.	Numeric	10
Detection Limit Type Text	20772	The text that describes the type of detection limit.	Alphanumeric	10
Detection Limit Units Text	20773	The text used to describe the units used for detection limit.	Alphanumeric	40
Direct Spatial Reference Method Text	20882	The text describing the system of objects used to represent space in the data set.	Alphanumeric	100
Distribution Organization Name	20883	The name of the distributing organization.	Alphanumeric	100
Distributor	11509	This subelement consists of the following subordinate fields that provide information about the distributor.	Alphanumeric	500
Distributor Address Text	20885	The text that describes an address line for the address.	Alphanumeric	200
Distributor Address Type Text	20884	The text describing the information provided by the distributor address.	Alphanumeric	200
Distributor City Name	20886	The name of the distributor address city.	Alphanumeric	65
Distributor Country Name	20889	The name of the distributor address country.	Alphanumeric	65
Distributor Electronic Mail Address Text	20892	The address of the electronic mailbox of the distributor organization or individual.	Alphanumeric	70
Distributor Facsimile Number	20891	The telephone number of a facsimile machine of the organization or individual.	Alphanumeric	10
Distributor Liability Text	20894	The text describing the statement of the liability assumed by the distributor.	Alphanumeric	200
Distributor Phone Number	20890	The telephone number by which individuals can speak to the distributor organization or individual.	Alphanumeric	10
Distributor Postal Code	20888	The code representing the distributor address ZIP code or other postal code.	Alphanumeric	10
Distributor State or Province Name	20887	The name of the distributor address state or province.	Alphanumeric	100
East Bounding Coordinate Number	20874	The number of the Eastern-most coordinate of the limit of coverage expressed in longitude.	Alphanumeric	7
Edition Text	20864	The text describing the edition of the referenced title.	Alphanumeric	50
Ending Date	20869	The date describing when an event stopped.	Alphanumeric	8
EPA Region Name	5775	The name that identifies an EPA Region.	Alphanumeric	9

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Field Observations Text	20774	The text that describes the field conditions of sampling.	Alphanumeric	200
Format Text	20775	The text that describes the type of system used to present the data.	Alphanumeric	500
Geometric Type Name	5761	The name of the geometric entity represented by one point or a sequence of latitude and longitude points.	Alphanumeric	6
Horizontal Accuracy Measure	5264	The measure of the accuracy (in meters) of the latitude and longitude coordinates.	Alphanumeric	6
Horizontal Collection Method Text	5731	The text that describes the method used to determine the latitude and longitude coordinates for a point on the earth.	Alphanumeric	60
Horizontal Reference Datum Name	5292	The name that describes the reference datum used in determining latitude and longitude coordinates.	Alphanumeric	7
Index Terms - Controlled	11522	This subelement is a grouping of descriptive terms drawn from a controlled vocabulary source to aid users in locating entries of potential interest. Each term is provided in the subordinate repeating field: Controlled Term.	Alphanumeric	500
Laboratory Analysis Identifier	20776	The identifier that describes the unique laboratory identification for an analysis sample.	Alphanumeric	40
Laboratory Information Text	20777	The text that describes the information about the laboratory where the analysis was completed.	Alphanumeric	200
Language Text	20778	The text that describes the language used in the data set.	Alphanumeric	70
Latitude Measure	5518	The measure of the angular distance on a meridian north or south of the equator.	Alphanumeric	10
Location Description Text	20779	The text that describes the sampling location.	Alphanumeric	200
Location Identifier	20780	The identifier for the sampling location at a site.	Alphanumeric	40
Location Name	20781	The name that describes the sampling location at a site.	Alphanumeric	40
Longitude Measure	5520	The measure of the angular distance on a meridian east or west of the prime meridian.	Alphanumeric	11
Maintenance Frequency Text	20872	The text describing the frequency with which modifications are made to the data set after the initial data set is completed.	Alphanumeric	50
Mean Standard Error Measure	20782	The measure of the overall quality of the data collected.	Alphanumeric	25

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Measured Quantity Number	6135	The dimension, capacity, or amount of something ascertained by measuring.	Numeric	7
North Bounding Coordinate Number	20875	The number of the Northern-most coordinate of the limit of coverage expressed in latitude.	Alphanumeric	6
Originator	11505	This element identifies the information resource originator.	Alphanumeric	500
Place Keywords Name	20877	The geographic name of a location covered by a data set.	Alphanumeric	100
Place Reference Text	20878	The text describing the reference to a formally registered thesaurus or a similar authoritative source of place keywords.	Alphanumeric	100
Point of Contact for Further Information	11516	This element identifies an organization, and a person where appropriate, serving as the point of contact plus methods that may be used to make contact.	Alphanumeric	500
Precision Measure	20783	The measure of mutual agreement among individual measurements of the same property.	Alphanumeric	25
Presentation Form Text	20865	The text describing the mode in which the geospatial data are represented.	Alphanumeric	100
Profile Address City Name	20856	The name of the profile address city.	Alphanumeric	65
Profile Address Country Name	20859	The name of the profile address country.	Alphanumeric	65
Profile Address Postal Code	20858	The code representing the profile address ZIP code or other postal code.	Alphanumeric	10
Profile Address State or Province Name	20857	The name of the profile address state or province.	Alphanumeric	100
Profile Address Text	20855	The text that describes an address line for the address.	Alphanumeric	200
Profile Address Type Text	20854	The text describing the information provided by the profile address.	Alphanumeric	200
Profile Electronic Mail Address Text	20862	The address of the electronic mailbox of the profile organization or individual.	Alphanumeric	70
Profile Facsimile Number	20861	The telephone number of a facsimile machine of the profile organization or individual.	Alphanumeric	10
Profile Metadata Organization Name	20853	The name of the organization which provides the metadata information.	Alphanumeric	100
Profile Telephone Number	20860	The telephone number by which individuals can speak to the profile organization or individual.	Alphanumeric	10

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Program Interest Name	6163	The name that indicates the environmental concern that is the reason for interest in a facility.	Alphanumeric	50
Progress Text	20871	The text describing the state of the data set.	Alphanumeric	100
Publication Date	20863	The date when the reference material was published or otherwise made available for release.	Date	8
Publication Place Text	20866	The text describing the location where the data set was published or released.	Alphanumeric	100
Publisher Name	20867	The name of the individual or organization that published the data set.	Alphanumeric	100
Purpose	11504	This element describes why the information resource is offered and identifies other programs, projects, and legislative actions wholly or partially responsible for the establishment or continued delivery of this information resource. It may include the origin and lineage of the information resource, and related information resources.	Alphanumeric	500
Quantitation Limits Measure	20784	The measure of the quantities of a target variable that can be quantified with the certainty required by the data user.	Alphanumeric	25
Recovery Measure	20785	The measure of bias in a measurement.	Alphanumeric	10
Reference Point Text	5288	The text that identifies the place for which geographic coordinates were established.	Alphanumeric	50
Related Onsite Measurement Data Text	20786	The text that describes any measurements related to but not part of the sampling effort.	Alphanumeric	200
Relative Standard Deviation Measure	20787	The measure of the standard deviation expressed as a percentage of the mean recovery.	Alphanumeric	25
Repeatability Measure	20788	The measure of the degree of agreement between independent test results produced by the same analyst using the same test method and equipment on random sampling of the same sample within a short time period.	Alphanumeric	10
Replicate Analyses Text	20789	The text that describes analyses of the variable of interest performed identically on multiple subsamples of the same sample within a short time interval.	Alphanumeric	25
Replicate Sample Identifier	20790	The identifier for multiple samples which are independently carried through all steps of the sampling process in an identical manner.	Alphanumeric	25

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Representative Sample Identifier	20791	The identifier for a sample taken so as to reflect the variable(s) of interest in the population as accurately and precisely as specified.	Alphanumeric	25
Representativeness Measure	20792	The measure of the degree to which data represents the frequency distribution of a specific variable in the population.	Alphanumeric	25
Reproducibility Measure	20793	The measure of the precision of the variability among the results of measurements of the same sample at different laboratories.	Alphanumeric	25
Resource Description	11510	This subelement identifies the resource as it is known to the distributor.	Alphanumeric	500
Sample Amount Quantity	20794	The quantity of weight or volume of field sample collected.	Numeric	15
Sample Amount Units Text	20795	The text that describes the units for sample amount.	Alphanumeric	40
Sample Average Measure	20825	The statistical measure of the average of a set of values.	Numeric	20
Sample Calibration Factor Measure	20796	The measure of the factor determined to convert measured sample to final results.	Alphanumeric	40
Sample Calibration Factor Units Text	20797	The text that describes the units for calibration factor.	Alphanumeric	40
Sample Collection End Date	20798	The calendar date when collection of the analyte was finished.	Date	8
Sample Collection End Time Measure	20799	The measure of clock time when collection of the analyte was finished.	Alphanumeric	10
Sample Collection Equipment Text	20800	The text that describes information about the equipment used to collect the sample.	Alphanumeric	100
Sample Collection Start Date	20801	The calendar date when collection of the analyte began.	Date	8
Sample Collection Start Time Measure	20802	The measure of clock time when collection of the analyte began.	Alphanumeric	10
Sample Container Type Text	20803	The text that describes the type of container used to collect sample.	Alphanumeric	40
Sample Depth/Altitude Measure	20804	The numerical measure of the vertical location of sample collection.	Numeric	25
Sample Depth/Altitude Units Text	20805	The text that describes the units for sample Depth/Altitude.	Alphanumeric	40

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Sample Description Text	20767	The text that describes the readily observable characteristics of a sample.	Alphanumeric	40
Sample Equipment Calibration Text	20806	The text that describes the method used to calibrate the sampling equipment.	Alphanumeric	150
Sample Frequency Measure	20807	The measure of the periodicity with which the sample is collected.	Alphanumeric	40
Sample Identification Code	20808	The unique code assigned to identify the sample.	Alphanumeric	40
Sample Matrix Text	20809	The text that describes the media type of the sample.	Alphanumeric	40
Sample Median Measure	20831	The statistical measure of the median of a set of values.	Numeric	25
Sample Method Text	20810	The text that describes the method used to collect an analyte.	Alphanumeric	100
Sample Variance Measure	20811	The statistical measure of the dispersion of a set of values.	Alphanumeric	10
Sampler Text	20812	The text that describes the personal information of the sampler.	Alphanumeric	60
Sampling Error Measure	20813	The measure of the difference between an estimate of a population value and its true value.	Alphanumeric	25
Sensitivity Measure	20814	The measure of the capability of method or instrument to discriminate between measurement responses representing different levels of a variable of interest.	Alphanumeric	25
Site Identifier	20815	The identifier for the broadly defined site where the sample was collected.	Alphanumeric	40
Site Name	20816	The descriptive name for the broadly defined site where the sample was collected.	Alphanumeric	40
Source Map Scale Number	5318	The number that represents the proportional distance on the ground for one unit of measure on the map or photo.	Alphanumeric	9
South Bounding Coordinate Number	20876	The number of the Southern-most coordinate of the limit of coverage expressed in latitude.	Alphanumeric	6
Standard Deviation Measure	20817	The measure that describes the imprecision of observed values.	Alphanumeric	25
Standard Error Measure	20818	The measure of the variability in estimates that occurs in repeated sampling.	Alphanumeric	25

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Standard Reference Material Text	20819	The text that describes a certified reference produced by the U.S. National Institute of Standards and Technology.	Alphanumeric	25
Supplemental Information	11537	Through this element, the record source may associate other descriptive information with the GILS Core locator record.	Alphanumeric	500
Thesaurus	11523	This subelement provides the reference to a formally registered thesaurus or similar authoritative source of the controlled index terms. Notes on how to obtain electronic access to or copies of the referenced source should be provided, possibly through a cross reference to another locator record that more fully describes the standard and its potential application to locating GILS information.	Alphanumeric	500
Title	11501	This element conveys the most significant aspects of the referenced resource and is intended for initial presentation to users independently of other elements. It should provide sufficient information to allow users to make an initial decision on likely relevance. It should convey the most significant information available, including the general topic area, as well as a specific reference to the subject.	Alphanumeric	500
Total Measurement Error Measure	20820	The measure of the sum of all the errors that occur from the taking of the sample through the reporting of results.	Alphanumeric	25
Uncertainty Measure	20821	The measure of the total variability associated with sampling error.	Alphanumeric	25
Unit of Measure Name	5304	The name of the determinate quantity for a standard of measurement used for measuring dimension, capacity, or amount of something.	Alphanumeric	40
Update Frequency Text	20822	The text that describes the length of time between instances when new data is added to the data set.	Alphanumeric	500
Use Constraints	11507	This element describes any constraints or legal prerequisites for using the information resource or its component products or services. This includes any use constraints applied to assure the protection of privacy or intellectual property and any other special restrictions or limitations on using the information resource.	Alphanumeric	500

<b>Data Element Name</b>	<b>EDR Identifier</b>	<b>Definition</b>	<b>Data Type</b>	<b>Length</b>
Variability Measure	20823	The measure of the observed differences attributable to diversity in a population.	Alphanumeric	25
West Bounding Coordinate Number	20873	The number of the Western-most coordinate of the limit of coverage expressed in longitude.	Alphanumeric	7